



ATIEC 2021

September 15, 2021

FIXM Update and Introduction to FIXM Templates

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Agenda

- FIXM Introduction / Video
- FIXM 4.2.0 Overview
- FIXM Applications and Message Templates
- FIXM User Manual
- Q & A



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FIXM Evolution



FIXM 4.0.0

August 2016

- Shift from community driven requirements to requirements based on global standards
- Introduction of the Messaging package
- Consolidation of the Foundation and Base packages



FIXM 4.1.0

December 2017

- Introduction of the new Extension mechanism
- Focus on improving aeronautical references, simplifying modeling choices, and improving overall model consistency



FIXM 4.2.0

February 2020

- Introduction of Applications as a third pillar of FIXM content
- Transition from Workbench to EA generated schemas
- Focus on FF-ICE alignment and requirements in preparation for FF-ICE/1 going live



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FIXM 4.2.0 Overview



- To date, FIXM Core has largely focused on pre-departure trajectory-based operations as outlined in FF-ICE/R1 as well as coverage of the existing PANSATM messages.
- FIXM Extensions and the newly introduced FIXM Applications allow the scope of FIXM to be expanded and refined as needed.



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FIXM 4.2 Improvements

- Introduction of FIXM Applications to support message templates and additional fields for message exchanges
- Representation for absent/deleted data
- Extension mechanism updates
- Improved Aeronautical data representation
- Limiting root elements in the physical model
- Transition from Workbench to Enterprise Architect generated schemas
- Further alignment with ATMRPP and FF-ICE requirements



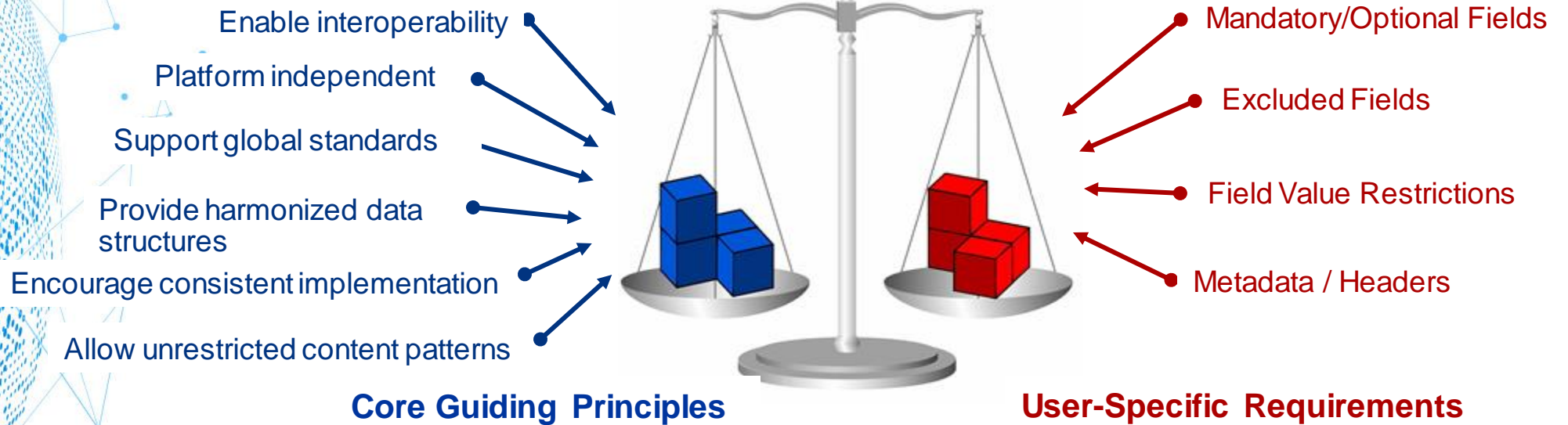
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FIXM Balancing Act

FIXM continually balances the goal of providing a highly flexible data standard with the need to accommodate user-specific requirements.



FIXM Applications and Message Templates allow FIXM to provide additional user-based requirements without breaking any of its guiding principles.



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What are FIXM Applications?

- FIXM is intended to support any and all exchanges of flight information, not just a specific set of pre-defined messages.
- For well-defined message exchanges, this flexibility is unneeded, and it is more useful to enforce syntax and content validation checks to ensure the data being exchanged is of high quality.
- FIXM Applications fill this gap by providing exchange-specific message data structures (for example, recipient lists, exchange-specific statuses, message type identifiers, sensitivity levels, message provenance, etc.) and message templates.
- FIXM Applications are modeled in UML, realized in XML, and sit at a layer above FIXM Core.



What are Message Templates?

- A message template is a more restrictive subset of message and flight data structures that are relevant to a given information exchange.
- By removing unused fields, adjusting multiplicities, and adding or further limiting pattern constraints, a template can tailor the broad standard represented by FIXM to reflect the content requirements of a particular message exchange.
- Templates offer message-specific guidance and validation rules while remaining compliant with the broader FIXM structures.

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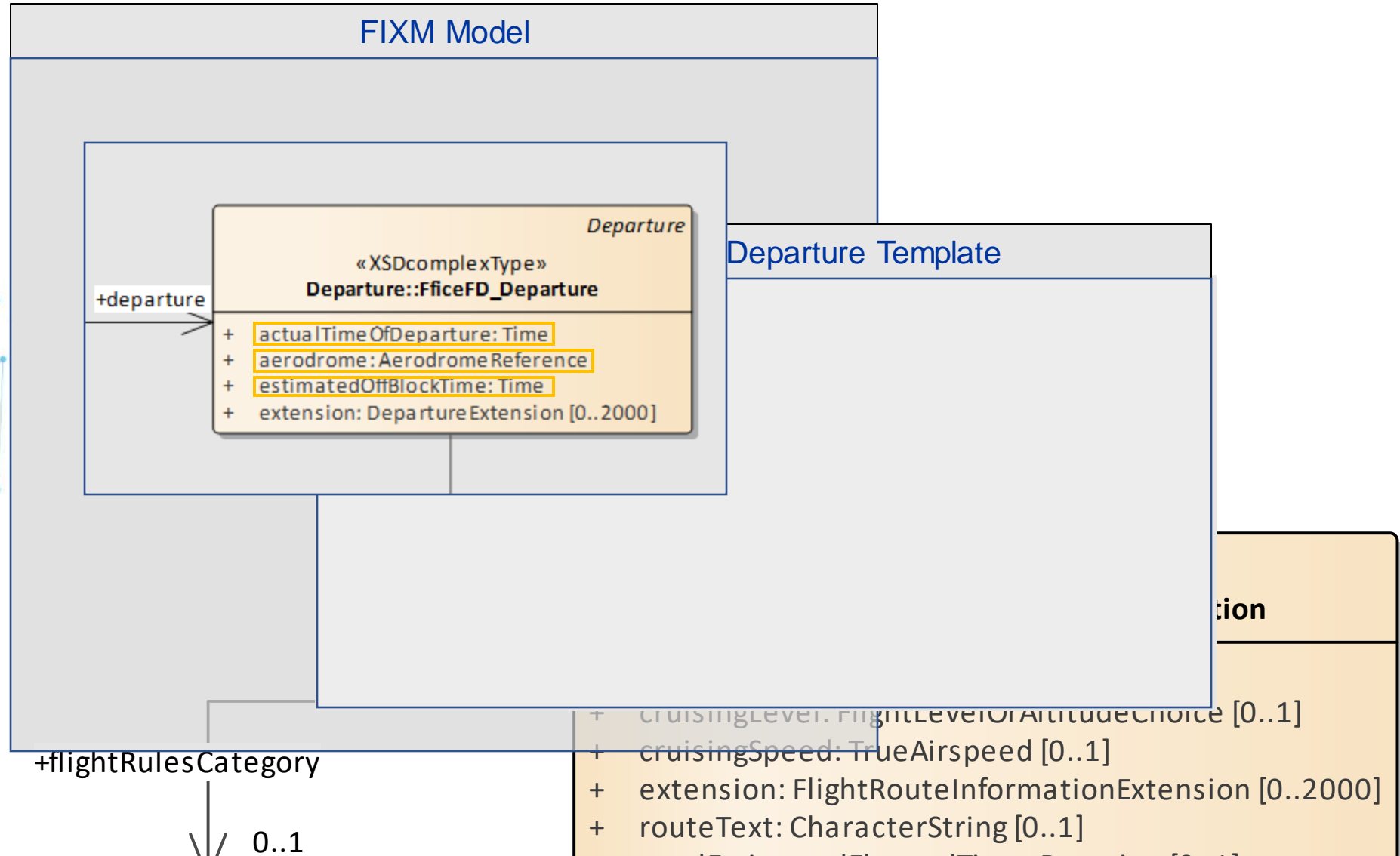
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object Core

Message Template Example





Message Template Benefits

Benefit of Templates	Without Templates	With Templates
Reduced Development Overhead	Increased development overhead as each user must independently interpret how message content requirements should be represented in FIXM format.	Tailored schemas reduce development overhead by providing additional guidance for creating messages with a FIXM-based content.
Consistent Message Structure	Individual interpretations of requirements could lead to inconsistent message content implementation across users.	Making dedicated message templates available to all users should improve implementation consistency.
Improved XML Validation	XML-based validation limited to data syntax checking with no guidance for required vs. optional or allowed vs. not allowed content (failing to fully leverage a major benefit of using XML).	XML-based validation enforces both syntax and content completeness rules (fully leveraging benefits of XML-based validation).

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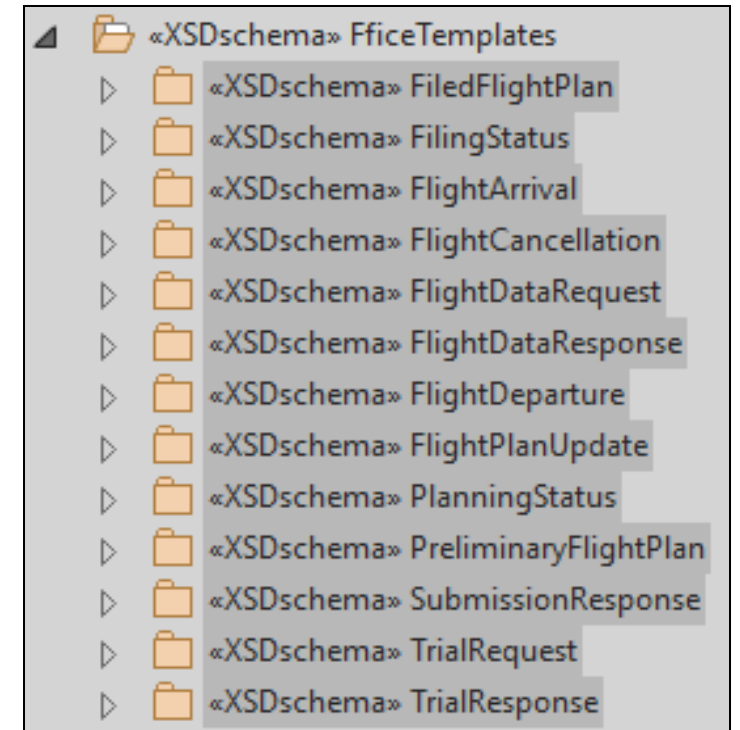


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FF-ICE Templates

- Today the FF-ICE Message Application contains thirteen Message Templates.
- Corresponds to the thirteen FF-ICE Messages defined in the FF-ICE Implementation Guidance (IG) Manual.
- Each template's content is based on the tables present in Appendix C of FF-ICE IG.



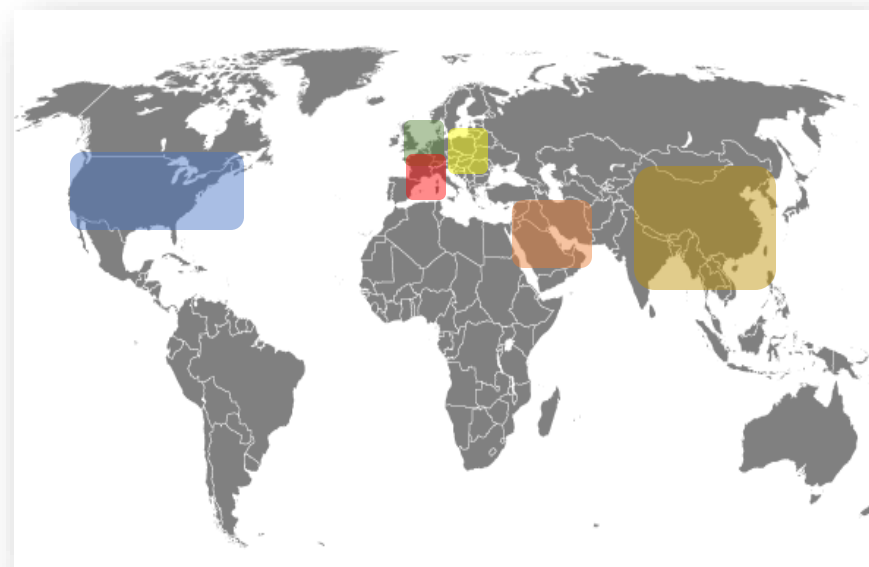


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FIXM Community

- FIXM is used across the international community to exchange flight and flow information.
- Many regions use FIXM (Core and Applications) in combination with local/regional extensions to satisfy local data exchange use cases.
- Examples include US, APAC, European, and GCAA Extensions
- The international community of users drive the evolution of FIXM through participation in virtual technical meetings and submittal of change requests (CR).



Boxes indicate communities of FIXM users

Community Applications

- The FIXM community is encouraged to create their own Application packages, complete with their own message templates, as needed.
- Most well-defined message exchanges can benefit from these new constructs.
- More information on Applications and message templates, including step-by-step guidance on creating your own, is available in the FIXM User Manual.



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FIXM User Manual

Enter search text here...

FIXM COMPONENTS

- > Introduction
- > FIXM Core
- > FIXM Applications
- > Extensions

GENERAL GUIDANCE

- > Introduction
- > Date/Time specification
- > Geographical positions
- > References to published aero...
- > Relative points
- > Vertical distances
- > Sequence numbers

Welcome to the FIXM User Manual

The FIXM User Manual, formerly known as Implementation Guidance, is developed and maintained by the FIXM Community. Content has been subject to FIXM CCB review and endorsement and is therefore the official recommendation of the FIXM CCB.

Note: The content of the FIXM User Manual is informative. The use of the words *shall* or *required* indicates a requirement to be strictly followed in order to conform to this guidance. The use of the words *should* or *recommended* indicates that there may may be valid reason in particular circumstances, to ignore a particular aspect of the guidance.

Guidance on FIXM Releases

This edition of the FIXM User Manual provides guidance for [FIXM Core 4.2.0](#), the [FF-ICE Application 1.0.0](#) and the [Basic Application 1.0.0](#).

Guidance for previous releases is available on [FIXM.aero](#).

Content and Target audience



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Learn More!

Website: <https://fixm.aero/>

FIXM User Manual: <https://docs.fixm.aero>



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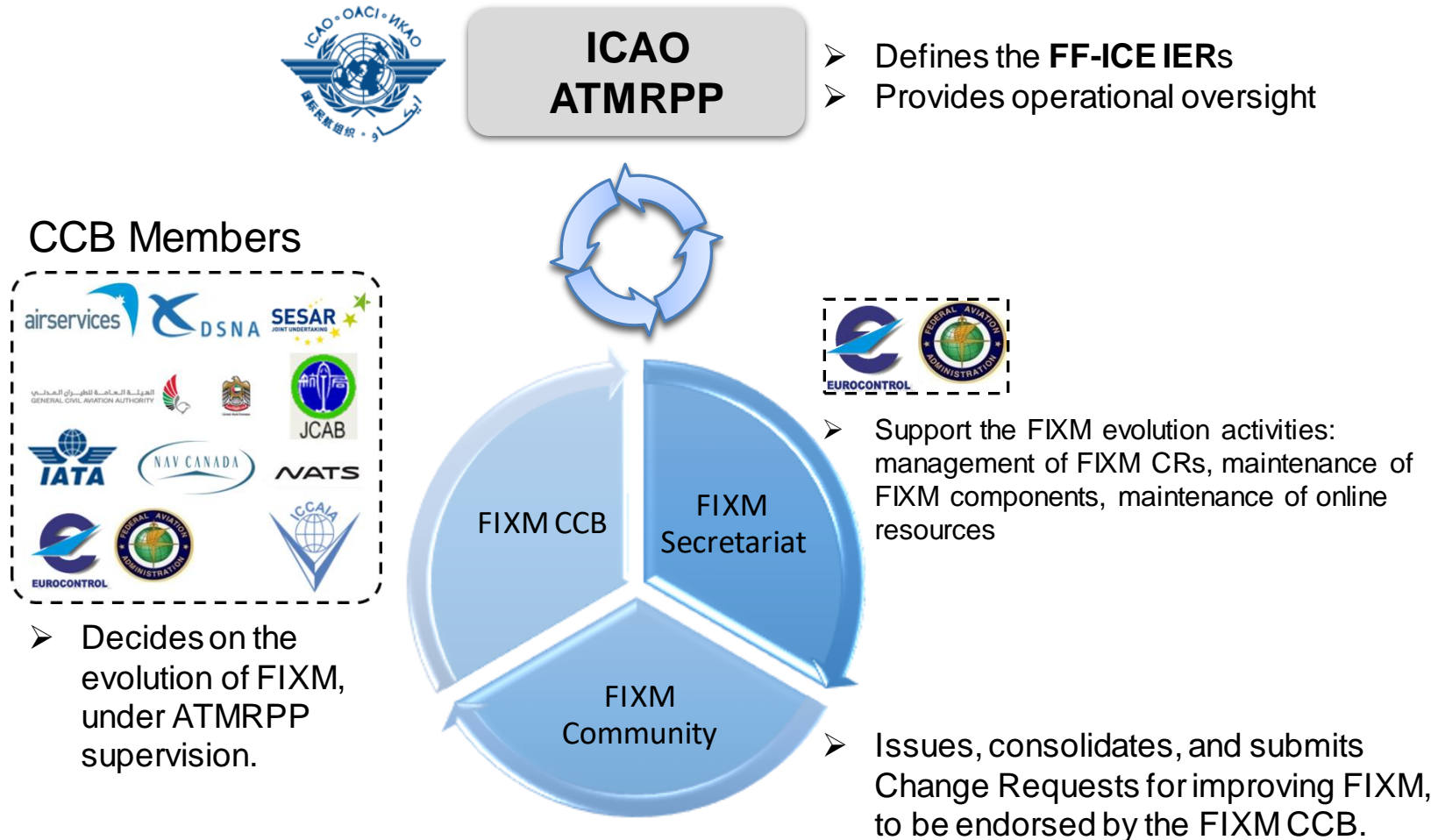
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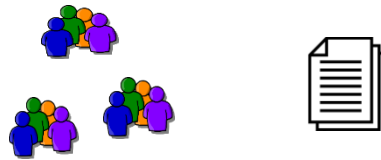
Backup Slides

FIXM Development: Roles and Responsibilities



FIXM Change Management: Change Requests (CR)

Change Request Drivers and Input: Community collaboration and requirements documents are key drivers to any changes in the FIXM Model. Anyone can submit a CR!



Community Collaboration **Requirements Documentation**

Key Components

- FFICE Requirement Documents & ATMRPP Concept Evolution
- Model review
- Community Involvement
- FIXM Work Area



Change Request Review: The CR process is an iterative process where the FIXM CCB reviews all CRs and determines an appropriate course of action.



FIXM CRs

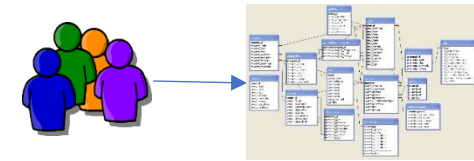
FIXM CCB

Key Components

- Submitted CRs
- CCB Involvement
- FIXM Work Area
- Approved CRs



Implement Change Requests: Once approved, CRs are implemented in the FIXM Model.



FIXM Secretariat

Key Components

- Approved CRs
- FIXM Model Updates
- Development Team Involvement
- FIXM.aero